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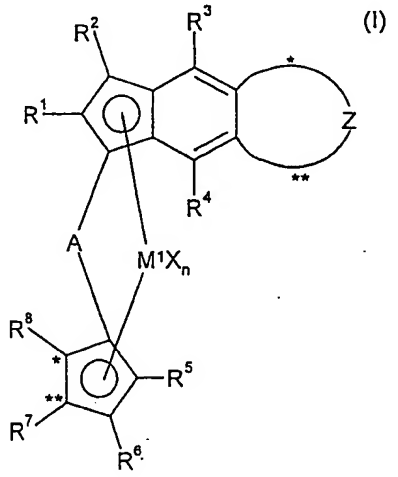
(54) Title: ORGANOMETALLIC TRANSITION METAL COMPOUND, BISCYCLOPENTADIENYL LIGAND SYSTEM, CATALYST SYSTEM AND PREPARATION OF POLYOLEFINS



(57) Abstract: The present invention relates to organometallic transition metal compounds of the formula (I) where M^1 is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides, the radicals X are identical or different and are each an organic or inorganic radical, with two radicals X also being able to be joined to one another, n is a natural number from 1 to 4, Z is a divalent organic group which has from 1 to 40 carbon atoms and together with the two carbon atoms of the indenyl system forms a saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 4 to 12 atoms, where Z within the ring system fused to the indenyl system may also contain one or more, identical or different heteroatoms selected from the group consisting of Si, Ge, N, P, 0, S, Se and Te, R^1 is hydrogen or an organic radical having from 1 to 40 carbon atoms, R^2 is hydrogen or an organic radical having from 1 to 40 carbon atoms, R^3 is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms, R^4 is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms, $R^5$is hydrogen or an organic radical having from 1 to 40 carbon atoms, $R^6$is hydrogen or an organic radical having from 1 to 40 carbon atoms, R^7, R^8 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms or R^7 and R^8 together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and may also contain heteroatoms selected from the group consisting of the elements Si, Ge, N, P, 0, S, Se and Te, A is a bridge consisting of a divalent atom or a divalent group, and if R^3 is hydrogen, then R^5 is an organic radical which has from 3 to 20 carbon atoms and is branched in the a position and R^6 is hydrogen, biscyclopentadienyl ligand systems having such a substitution pattern, catalyst systems comprising at least one of the organometallic transition metal compounds of the present invention, a process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of one of the catalyst systems of the present invention, the use of the biscyclopentadienyl ligand systems of the present invention for preparing organometallic transition metal compounds and a process for preparing organometallic transition metal compounds using the biscyclopentadienyl ligand systems.

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